

REMARKS

At the time the current Official Action was mailed, the Examiner rejected claims 11-16. Applicants have amended claim 11. Additionally, Applicants have added new claims 21-34. Applicants note that original claims 2-20 and 17-20 have been reintroduced as new claims 22-34. The only outstanding rejection of claims 11-16 is a statutory double patenting rejection. Reconsideration of the application in view of the remarks set forth below is respectfully requested.

Double Patenting Rejection

The Examiner rejected claims 11-16 under 35 U.S.C. § 101 as claiming the same invention as that of claims 1-6 of prior U.S. Patent No. 6,682,955. In response, Applicants have amended claim 11 so that claim 11 is now dependent on new claim 21. Accordingly, Applicants respectfully request withdrawal of the double patenting rejection of claim 11 and the claims that depend therefrom.

New Claims

Applicants have added new claims 21-34, of which 22-34 were originally filed as claim 2-10 and 17-20. Applicants assert that new claims 21-34 are allowable over any of the previously cited references. Specifically, Applicants address the Examiner's previous rejection of original claims 1-10 and 17-20 under Pedersen et al. (US 5,675,180, hereinafter "Pedersen").

New independent claim 21 recites, *inter alia*, “forming a die stack...wherein forming the die stack comprises mechanically coupling the die stack together via the adhesive, and electrically coupling the die stack together via bond wires or conductive balls.” In contrast, Pederson discloses electrically coupling the segments 36 via “conductive epoxy traces 130” that “are dispensed along the beveled edge walls 102 of the segments 36.” Pedersen, col. 9, lines 59-63. As expressly stated in Pedersen:

After the stack 112 solidifies, the edge bond pads 42 (see FIG. 8B) on each of the segments 36 is vertically electrically connected in the stack 112 in order to provide an electrically functional stack 112. Prior art methods for vertically connecting elements of a stack include connecting the elements with metal rods, and providing a plurality of vias in the elements and inserting an electrically conductive material in the vias, or filling the vias with a conductive liquid to provide an electrical path between the elements of the stack.

Id. at col. 9, lines 44-53.

To provide a vertical electrical path between segments 36 of a stack 112, silvered-filled conductive epoxy traces 130 are dispensed by a dispense mechanism 132 along the beveled edge walls 102 of the segments 36. The dispense mechanism 132 moves in an x- and y-direction and places the epoxy traces on the stack 112 in alignment with the external bond pads 42 of the segments 36.

Id. at col. 9, lines 59-63.

As clearly illustrated in FIGS. 10A and 10B of Pedersen, the “conductive epoxy traces 130” are located along the edges of the stack 112, and are clearly not “bond wires” or “conductive balls” as recited in claim 21. Additionally, the “conductive epoxy traces 130” in Pedersen must be dispensed in the manner described, as the “conductive epoxy traces 130” must be “in alignment with the external bond segments 36,” thus limiting the application of the

techniques disclosed in Pedersen. *Id.* at col. 9, lines 64-66. Accordingly, Pederson does not disclose “forming a die stack...wherein forming the die stack comprises mechanically coupling the die stack together via the adhesive and electrically coupling the die stack together via bond wires or conductive balls.” as recited in claim 21.

In addition, new independent claim 21 is directed toward a “die stack.” In contrast, Pedersen discloses a stack of “silicon segments” and techniques for stacking “silicon segments.” Pedersen, col. 2, lines 40-41. Pedersen defines “silicon segments” as “a plurality of adjacent die on a semiconductor wafer.” *Id.*, col. 2, lines 42-50. As discussed in the specification of the present application, a die stack is a stack of individually excised dies. Pedersen clearly distinguishes the “silicon segments” and the invention disclosed therein from a “die stack,” by distinguishing their segment stack from a die stack. For example, Pedersen states “[t]he present invention is an improvement over prior methods in which individual die 32 are stacked, because the segments 36 comprising the stack 112 of the present invention may be of varying thickness and may be stacked in any order.” *Id.*, col. 9, lines 39-43.

Thus, the stack of “silicon segments” disclosed in Pedersen, wherein each silicon segment includes a plurality of adjacent dies on a semiconductor wafer, is not reasonably equivalent to the “die stack” recited in independent claim 21. As discussed above, Pedersen expressly distinguishes the segment stacks of Pedersen from a die stack. Therefore, Pedersen does not disclose the “die stack” or “forming a die stack comprising an adhesive on at least one surface of a die” as recited in independent claim 21. For at least these reasons, Applicants respectfully

submit that claim 21 and the claims that depend therefrom are allowable over the Pedersen reference.

Conclusion

In view of the remarks set forth above, Applicants respectfully request reconsideration of the Examiner's rejections and allowance of all pending claims. If the Examiner believes that a telephonic interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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